# TVP-1000

## Video Processor, Scaler, Switcher, Integrated TV Tuner with Hi-Resolution Picture-in-Picture

# Installation and Operations Manual

Manual Rev: 030401
Firmware Rev: 1.30 and above

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Aurora Multimedia

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## 1.0 Product Description

The TVP-1000 is an integrated Scaler, TV Tuner, and Switcher capable of Hi-Res PiP. The TVP-1000 provides enhanced functionality to Pioneer plasmas for a variety of applications including conference rooms, boardrooms, video conferencing, training facilities, broadcast and video production, home entertainment and much more.

The TVP-1000 and the Pioneer plasma make the perfect combination.

### Features

- **Video Processor, Scaler, Switcher. Hi Res PiP, Integrated TV Tuner**
- **Multimedia Inputs: RF Input, Video/S-Video Input, Computer/Component Input.**
- **Compatible with 1080i, 720p, 480i, 480p, VGA, WVGA, SVGA, XGA, WXGA input resolutions.**
- **Hi-Res PiP capabilities such as Side-by-Side images, Transulcent PiP, Multi image PiP**
- **MAD™ (Motion Adaptive De-interlacing) provides superior image enhancements**
- **3:2 Pulldown**
- **Adaptive 4H comb filtering with Y/C processing produces exceptionally high quality images with image enhancement and noise suppression.**
- **RS-232, IR, Contact Closure Control.**

## 2.0 Warning: The TVP-1000 is an ELECTROSTATIC SENSITIVE unit. Please observe precautions in handling.

## 2.1 Caution: Static (Still) pictures will cause plasma "burn in" and may damage the plasma display. Avoid prolonged usage of the PiP and On Screen Display. When using static images, reducing brightness and/or contrast can help reduce the risk of damage to the plasma. Refer to the Pioneer owners and technical manual about additional precautions and use with expansion cards.

### 3.0 Unpacking

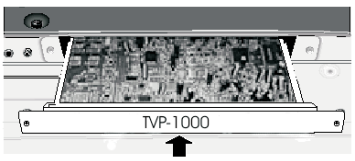
(1) - TVP-1000
(1) - Installation and Operations Manual
(1) - Control Cable [6 pin mini DIN Male - 6 pin mini DIN Male]
(1) - 47 Button Remote IRC-1a (Note: Units purchased without a remote can be upgraded. Contact your local dealer)
(1) - 6 Pin Mini DIN Male - Female 9 Pin (Firmware Upgrade / RS-232 Control Cable)

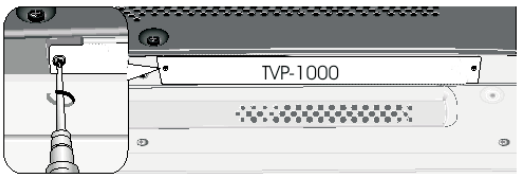
Note: Please examine the TVP-1000 for any signs of shipping damage.

### 4.0 Installation

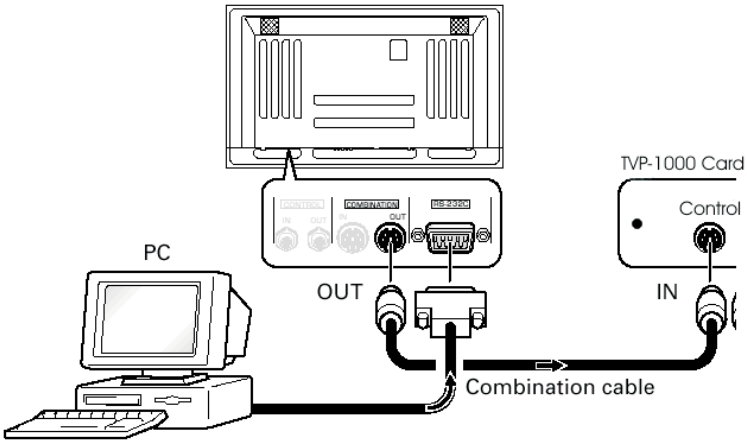
Before the TVP-1000 board is installed into the Pioneer plasma, the following must be setup:

1) With the Plasma power off (use main power switch on back of plasma), remove the card slot cover and insert the TVP-1000 board. Secure the TVP-1000 using the screws from the cover.

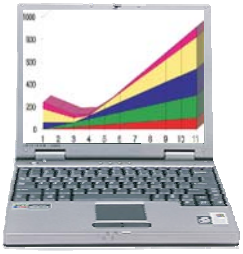



2) If using RS-232 control connect the supplied black 6 pin - 6 pin Mini Din cable from the TVP-1000 control port to the Pioneer's Combo out port.



For RS-232 Control use the provided 6 pin mini DIN cable and connect it to the Pioneer plasma Combination Out Port.



RGB / YPbPr Input
(Computer, Component Sources, etc.)

Video/S-Video Input
(DVD, VCR, etc.)

Antenna Input
(Cable TV, etc.)

**TVP-1000 Setup/Connection**

## 5.0 Pioneer Plasma Setup

1) Turn the main power switch located underneath the plasma on. The Plasma should be in standby (Solid Red LED on Front). With the Pioneer remote press the Menu button and then press the Standby button within 3 seconds (**Do not** hold buttons down together). The plasma will power on and should read "INTEGRATOR MENU" at the top of the screen.

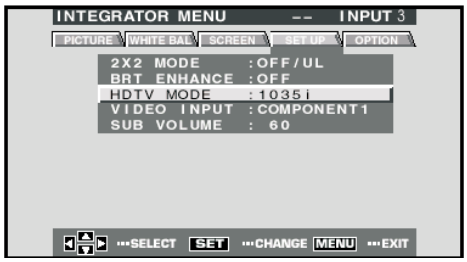
2) Select Input 3 using the Pioneer remote button 3.

3) *OPTION TAB*

BAUD RATE: Change to 9600BPS (factory default is 4800)
ID NO. SET: Change to 00 or any other value. Serial port will not work without ID number.
SLOT INPUT: Change to COMPONENT 1 (factory default is RGB) Scroll down to reveal the remaining items.
ORBITER MODE: Change to ON. This feature helps prevent static image burn in.

4) *SET UP TAB*

HDTV MODE: Change to 1080i (factory default is 1035i).


INTEGRATOR MENU -- INPUT 3
PICTURE WHITE BAL SCREEN SET UP OPTION
2X2 MODE :OFF/UL
BRT ENHANCE :OFF
HDTV MODE :1035i
VIDEO INPUT :COMPONENT1
SUB VOLUME : 60
SELECT SET CHANGE MENU EXIT

7) *SCREEN TAB*

H. POSITION: Change horizontal centering to about 138 for the Pioneer 503 to center the image better.

***Note**: For Optimal size settings, in the TVP-1000 Display Setup (access only with PiP setup-PiP Mode off), set the Horizontal size (H SIZE) to 95 and the Vertical Size (V SIZE) to 95.*

## 6.0 System Overview

The vast amount of features in the TVP-1000 can seem overwhelming at first. As you will see it is pretty easy to catch on once explained.

Think of the TVP-1000 as a separate device living inside the Plasma with its own On Screen Display (OSD) and input connections. Once input 3 on the Plasma is selected it becomes show time for the TVP-1000. Using the 47 button full featured remote many of the functions can be accessed directly. The Pioneer remote can also be used but takes a little more of getting around the menus to achieve an end result. When the menu button is pressed (lets assume you are using the 47 button remote) an OSD is generated from the TVP-1000 will appear. It will look very different from the OSD of the Pioneer and it is possible to have both the Pioneer menus and the TVP-1000 menus on at the same time. There is nothing wrong with this but can be a little confusing to operate when both are displayed at the same time. When on input 3 there should be no need to use the Pioneer OSD. As a protection against burning the screen the TVP-1000 menu will close if not used for 20 seconds. The menu structure and features are described in the OSD section of the manual.

The TVP-1000 has a Main channel and a PiP channel. Any input on the card can be sent to the Main as well as the PiP but with limitations to the combinations. The TVP-1000 can only PiP the 15 pin RGBHV / YPbPr -vs- Video / S-Video / TV. It is possible to watch PC and TV at the same time but video with TV will not work. Audio always follows the Main input channel.

Full control over the Main and PiP channel independently can make viewing more enjoyable. Controls for brightness, contrast, saturation, sharpness, size, phase, position, blending, and much more are available via the menu. It is beneficial to play with all the different features to see the effects for better or worse to find what works best for your viewing. The TVP-1000 will automatically try to make the best image when first locked on to the source but this can be overridden for additional sharpness, or maybe some noise reduction.

Another great feature of the TVP-1000 is the ability to upgrade the firmware for additional features or fixes. Try to keep an eye out for the latest releases on www.auroramultimedia.com to take advantage of the new version. The firmware is easily upload to the TVP-1000 with the Flash123 utility that is free on our web site.

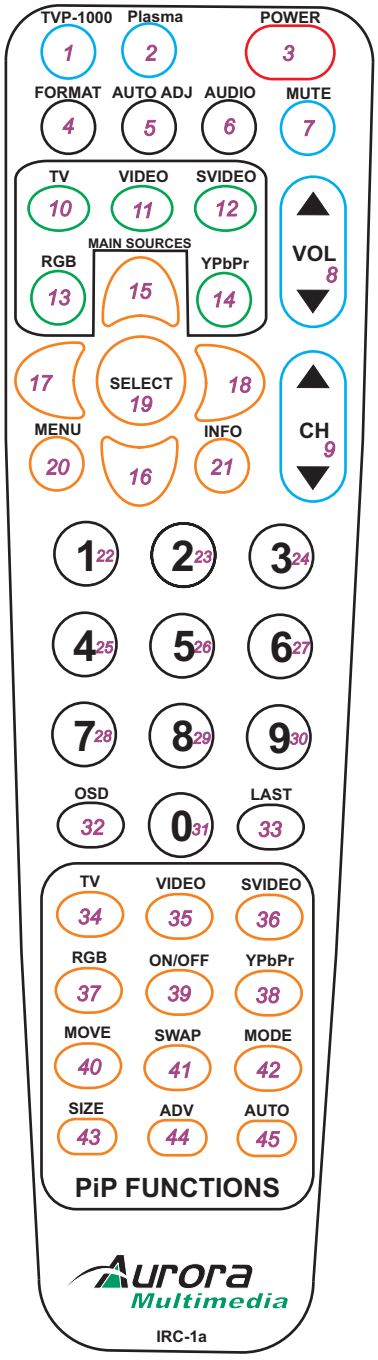
Remember, people see things differently. What looks good to one person may not to another. The power of the TVP-1000 allows you to tailor the image to just about anyones liking. Most important... ENJOY!!!

## 5.1 Understanding PiP modes

While the TVP1000 is very powerful in the feature set, there are some hardware limitations based on the output resolution and source input resolution. The Main input can upscale and downscale any image. The PiP can only downscale or send out equal resolution when outputting a progressive signal. That is why in some combinations the PiP window will not go as large as other modes.
Side by Side mode has the toughest job since the PiP is forced to be at a specific size. PiP swap is not available in this mode so it is easier to tell which side (Main or PiP) is better suited for the input vs the output. Example: With the 1080i output it is best to send RGB to the Main and Video to the PiP. If a combination does not work in side by side, try the opposite input (Main vs PiP).
Overall, the PiP modes can be a very powerful tool if understood and implemented correctly. Presentations will benefit in ways that could not be cost effectively done. Video Conferencing with the power of side by side and translucent PiP will solve problems of years past trying to view hi-res computer with the far end. The best application for this unit is the one you create!!!

## 7.0 Remote Control

### Using the Aurora IRC-1a 47 Button Remote




The Aurora remote has the ability to control the TVP-1000 and the Pioneer plasma. There are 2 buttons at the top of the remote labeled TVP-1000 and Plasma. When the TVP-1000 button is pressed, all the buttons will control functions of the TVP-1000 card provided the plasma is on input 3. The volume, mute, and power buttons will not work in this mode. To control the Plasma functions press the Plasma button. The remote will now replicate the Pioneer remote. Not all the buttons will function as there are not as many functions on the Pioneer remote. Keep in mind the remote remembers the last mode selected so it only needs to be done once. You do not need to press the TVP-1000 and Plasma button every time before pressing a function. These buttons are designed to switch the modes of operation. For example, press the TVP-1000 then use any of the buttons below to control the TVP-1000 card. Now if you want to change the plasma to input 2 and auto size press the Plamsa button and then the 2 button followed by the auto adj button.

Version 1a of the Aurora remote has another mode which can be activated when both the TVP-1000 and Plasma button are pressed and held for 5 seconds. This only has to be done once to activate the new mode (mixed mode) of operation. The TVP-1000 button when pressed will now automatically send the Pioneer command for input 3 when pressed to make certain the card slot is selected. The volume, mute and power will control the Pioneer and all the other buttons will control the TVP-1000 functions. This new mixed mode of commands makes it easier to control the unit without having to switch back and forth with the top bottons to control the plasma. The Plasma button will still work as the other mode controlling only the plasma functions. To get out of the new mode press the TVP-1000 and Plasma button for 5 seconds again or removing the batteries of 30 seconds will also default the remote back to the original mode of operation.

The remote has been color coded and boxed in some areas to make it easy to isolate the functions that are in common. The green buttons at the top of the remote are for selecting the main input sources. Below that are the orange menu control buttons. The keypad follows next for tuner control and other number entry. The pip functions are the orange buttons located at the bottom. The source selections for the pip input and effects can be found here. Some of the buttons will also serve as quick access functions when in certain modes to make it easier to use. For example, the orange up and down arrows become the pip blending control when no menu is on the screen and single pip mode has been selected.

## 7.0 Remote Control (continued)

***Note: TVP-1000 functions will operate only when TVP-1000 button is pressed. Plasma functions will operate only when Plamsa button is pressed or if in mixed mode when the TVP-1000 button is pressed.***

1. TVP-1000 - Selects the TVP-1000 to be controlled from the remote
2. Plasma - Selects the Plasma to be controlled from the remote
3. POWER - Controls power for the Plasma
4. FORMAT - Steps through the formats (Expand, Letter Box, Pillar Box, etc) or controls screen size for Plasma
5. AUTO ADJ - Auto Adjust for RGB input or Auto Setup for Plasma
6. AUDIO - Audio follow (Main / PiP) or Point Zoom for Plasma
7. MUTE - Toggles the volume mute on/off on the Plasma
8. VOLUME - Ramps the volume up or down on the Plasma
9. CHANNEL - Changes the TV channel + or -

Main Sources

10. TV INPUT - Selects the TV Antenna as the Main input
11. VIDEO INPUT - Selects the Video as the Main input
12. SVIDEO INPUT - Selects the S-Video as the Main input
13. RGB INPUT - Selects the RGB as the Main input
14. YPBPR INPUT - Selects the YPbPr as the Main input

15. UP ARROW - Used with menu function to navigate and controls PiP Blending (Single PiP no menus on the screen)
16. DOWN ARROW - Used with menu function to navigate and controls PiP Blending (Single PiP no menus on the screen)
17. LEFT ARROW - Used with menu function to navigate
18. RIGHT ARROW - Used with menu function to navigate
19. SELECT - Used with menu function to select a feature
20. MENU - Enters and exits OSD menu structure
21. INFO - Displays in the upper corner input and timing information

22. 1 Key - Used for channel selection or input 1 for Plasma
23. 2 Key - Used for channel selection or input 2 for Plasma
24. 3 Key - Used for channel selection or input 3 for Plasma
25. 4 Key - Used for channel selection or input 4 for Plasma
26. 5 Key - Used for channel selection or input 5 for Plasma
27-31 Keys - Used for channel selection

32. OSD - Toggles On Screen Display on/off
33. LAST - Returns to the last channel select

PiP Input Selection

34. TV INPUT - Selects the TV Antenna as the PiP input
35. VIDEO INPUT - Selects the Video as the PiP input
36. SVIDEO INPUT - Selects the S-Video as the PiP input
37. RGB INPUT - Selects the RGB as the PiP input
38. YPBPR INPUT - Selects the YPbPr as the PiP input

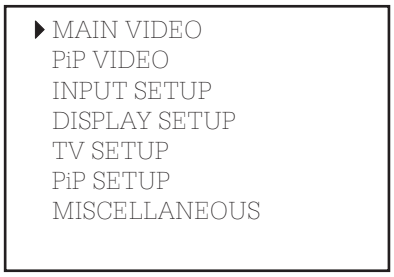
39. ON/OFF - Turns last PiP mode selected on and off
40. MOVE - Moves Single PiP to next area of display
41. SWAP - Main Input becomes PiP and vice-versa
42. MODE - Steps through all the PiP modes ex. single-pap-tile-etc
43. SIZE - Steps through different sizes PiP for Single Mode
44. ADV - Advances to next PiP window in the Tile modes
45. AUTO - Starts and stops 1 sec auto advance in the Tile Modes

## 8.0 On Screen Display (OSD)

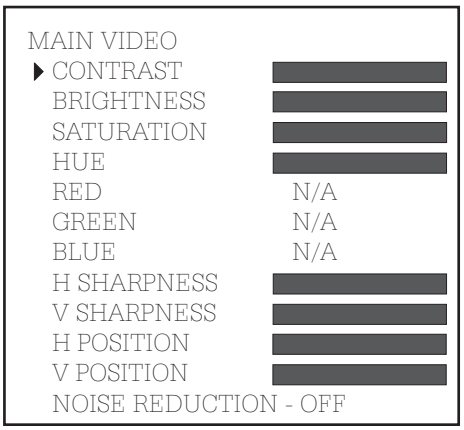
1. The On Screen Display is activated with the "Menu" button.
2. The OSD is removed if the "Menu" key is again pressed.
3. Pressing the "Menu key returns to the previous menu level. All menus initially mark the first menu item.

8.1 OSD MAIN MENU
The first menu column is a set of icons displayed vertically within the OSD.
Each menu item is used to navigate to a submenu, which is displayed when the "Select" key is pressed.

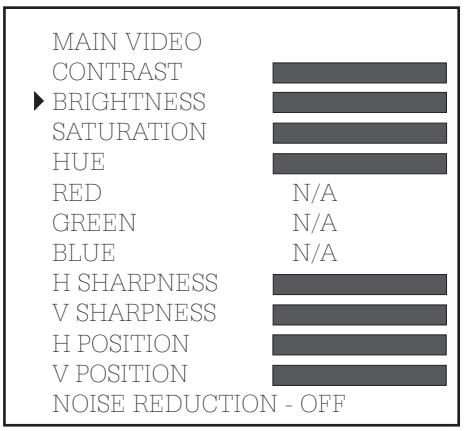
The MAIN startup menu contains the following menu items:




8.2 MAIN VIDEO
The MAIN video menu contains the following menu items for main channel adjustment. The slider is displayed on the right hand side of the sub menu items. The menu items are selected using "<" and ">" keys. The item is marked with "▶" when selected.




Pressing the "Select" key allows the value to be adjusted with the "<" and the ">" keys. The new value is saved when the "Menu" key is pressed (Text turns white).




8.2.1 CONTRAST
Activates slider to adjust picture contrast.

## On Screen Display (continued)

8.2.2 BRIGHTNESS
Activates slider to adjust picture brightness.

8.2.3 SATURATION
Activates slider to adjust color saturation. (This item is disabled when input is RGB.)

8.2.4 HUE
Activates slider to adjust hue. (This item is disabled when input is RGB.)

8.2.5 H SHARPNESS
Activates slider to adjust horizontal sharpness. This value will be lost when a new source is selected or the power is cycled. The Sharpness is processed automatically based on resolution and picture size.

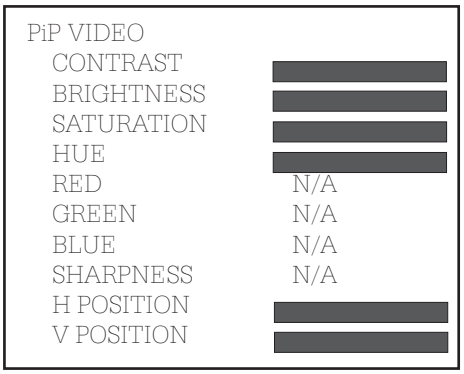
8.2.6 V SHARPNESS
Activates slider to adjust vertical sharpness. This value will be lost when a new source is selected or the power is cycled. The Sharpness is processed automatically based on resolution and picture size.

8.2.7 H POSITION
Activates slider to adjust horizontal input position.

8.2.8 V POSITION
Activates slider to adjust vertical input position.

8.2.9 NOISE REDUCTION
Enable or disable noise reduction filters in MAIN channel. Noise reduction will help random noise but a loss in sharpness may occur.

8.3 PiP VIDEO
The PiP video menu contains the following menu items for PiP channel adjustment. The slider is displayed on the right hand side of the sub menu items. The item is marked with "▶" when selected. Pressing "Select" allows the value to be adjusted with "<" and ">" keys.




8.3.1 CONTRAST
Activates slider to adjust picture contrast.

8.3.2 BRIGHTNESS
Activates slider to adjust picture brightness.

8.3.3 SATURATION
Activates slider to adjust color saturation. (This item is disabled when input is RGB).

8.3.4 HUE
Activates slider to adjust hue. (This item is disabled when input is RGB).

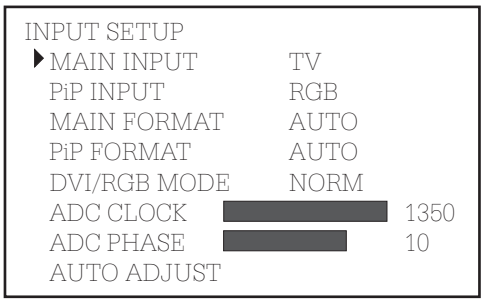
## On Screen Display (continued)

8.3.6 V POSITION
Activates slider to adjust vertical position.

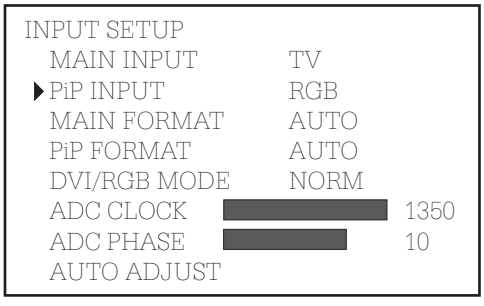
8.4 INPUT SETUP
The Input Setup menu contains the sub-menu for input signal selection and input format selection. Both MAIN and PiP channel can map to any one of the following video input. However, there are restrictions based on the board configuration. The chart below shows the valid input combinations.

| Valid Input Combinations | |
|---|---|
| MAIN | PiP |
| TV | RGB |
| TV | YPbPr |
| VIDEO | RGB |
| VIDEO | YPbPr |
| SVIDEO | RGB |
| SVIDEO | YPbPr |
| RGB | TV |
| RGB | VIDEO |
| RGB | SVIDEO |
| YPbPr | TV |
| YPbPr | VIDEO |
| YPbPr | SVIDEO |

8.4.1 MAIN INPUT
For MAIN channel signal source, pressing the "Select" key permits the change of input using the "<" and ">' keys. The color of the selection is RED when it is changed. Press "Select" key to confirm the current selection.



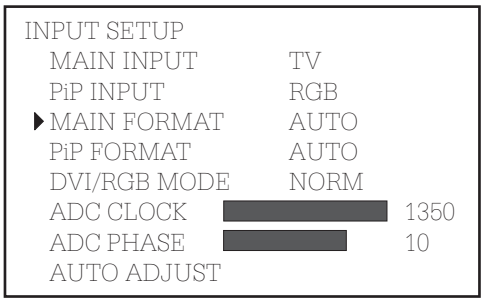

8.4.2 PiP INPUT
For PiP channel signal source, move "▶" down and press "Select" key then change of PiP input using the "<" and ">" keys.



## On Screen Display (continued)

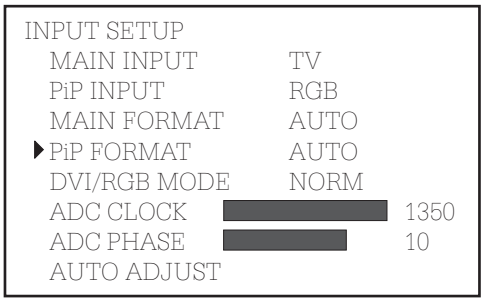
8.4.3 MAIN FORMAT

Allows the user to manually override the auto input detection. The firmware detects the input format automatically and converts it to selected display format.



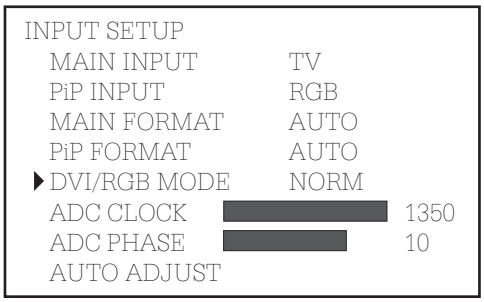

8.4.4 PiP FORMAT

Allows the user to manually override the auto input detection. The firmware detects the input format automatically and converts it to the selected display format.



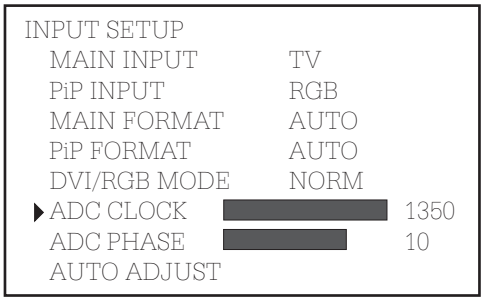

8.4.5 DVI/RGB MODE

This feature sets the DVI/RGB input mode to NORM, WIDE, or VIDEO. Since WVGA & WXGA sources have very similar frequencies it tells the micro controller to go to the proper setting when set to WIDE. If a 480p, 720p, or 1080i source is being used then VIDEO would be the best choice. Otherwise, NORM will handle most of the standard PC resolutions.




8.4.6 ADC CLOCK & ADC PHASE

Allows the user to manually override the default ADC clock & phase for various RGB graphic modes. The clock and phase are good for cleaning up noisy images by assuring a clean lock. The firmware programs the ADC phase to zero for all input modes. The menu item is disabled when the input is not RGB.




8.4.6 AUTO ADJUST

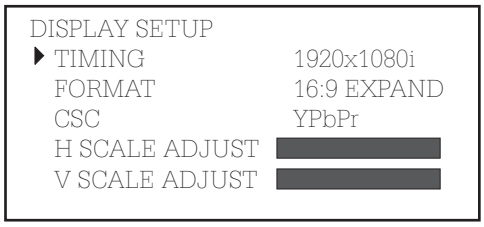
Selecting this feature when RGB is selected and a source is present will try to lock the Clock, Phase, H. Position, and V. Position. If the Auto feature can not figure the value it will exit without any effect.

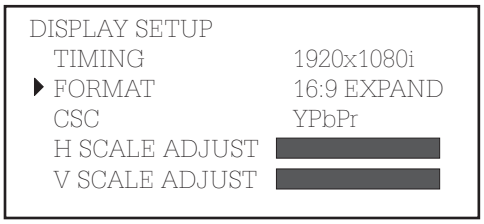
## On Screen Display (continued)

8.5 DISPLAY SETUP
The display setup menu contains the sub-menu for output display timing and display format selection.

8.5.1 TIMING
The 1920x1080i is the default hardware display timing but 720p can be selected as well. 1080i is best for overall features and PC signals while the 720p mode tends to be sharper and good for video sources.

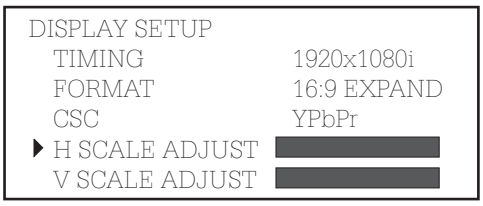
8.5.2 FORMAT
The output display format is defaulted to 16:9 EXPAND.

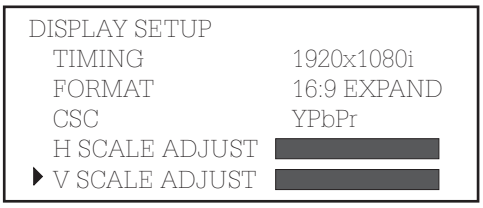



8.5.3 CSC
Defaulted to YPbPr

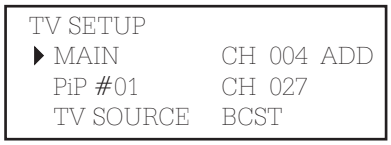
8.5.4 H SCALE ADJUST & V SCALE ADJUST
The user adjusts horizontal or vertical scale by the "<" and ">" keys for different types of Plasmas and monitors. The display active start position is adjusted accordingly to keep the image in the center position

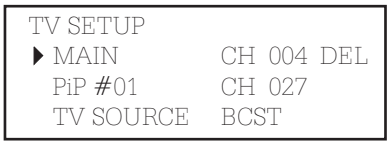


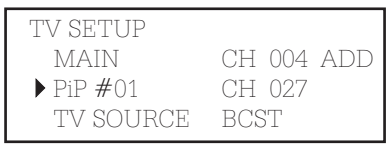

8.6 TV CHANNEL
The TV channel menu displays the channel for each window (MAIN AND PiP) on the window list. This is an alternate method of changing channels without the requirement of selecting a window.

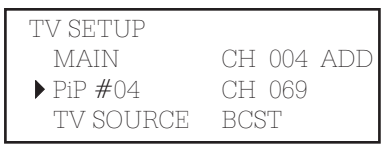
8.6.1 MAIN
The MAIN window channel number is always the first on the list. For MAIN, pressing the "Select" keys permits the changing of channels using the "<" and ">" keys or the numeric keys on remote control. As of version 1.16 the ability to ADD and DELETE channels has been made available. Pressing the select key again will move to the ADD/DEL field for that channel. Use the arrow keys to toggle between the choices. When using the channel + or - the DEL channels will be passed.




8.6.2 PiP
For PiP, pressing the "Select" key permits the change of PiP window number using the "<" and ">" keys.
The corresponding channel number is updated when PiP # is changed. Pressing the "Select" again permits the change of channels using the "<" and ">" keys or numeric keys on the remote control. The color of the number is RED when it is selected or changed.



## On Screen Display (continued)

8.6.3 SOURCE / COUNTRY (PAL / SECAM Version)
There are three choices for TV sources: BCST (broadcast), CATV(cable), IRC and HRC. The default setting is CATV.
If this unit is a PAL / SECAM version then there is a place for Country code.

```
TV SETUP
  MAIN          CH 004 ADD
  PiP #01       CH 027
  TV SOURCE     CATV
```

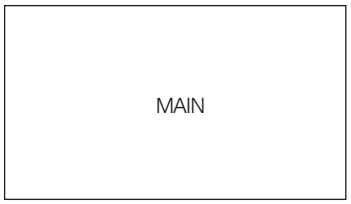
```
TV SETUP
  MAIN          CH 004 ADD
  PiP #01       CH 027
  COUNTRY       UK
```

8.7 PiP SETUP
The PiP setup menu is used to subdivide the screen into a pre-defined set of windows. The actual formats are different depending on aspect ration of the output display.

```
PiP SETUP
▶ PiP MODE          -OFF
  ASPECT RATIO
  SIZE
  H POS
  V POS
  PiP BLENDING
```

8.7.1 PiP MODE
The PiP mode selection is either OFF (default), ONE(single PiP), PaP, TILE 1+4, TILE 1+12, TILE 0+16(multiple PiP), Side-by-Side, and Side-by-Side Vertical Stretch. The values of the corresponding setup are not displayed when PiP mode is OFF. The sub-menu items: aspect, ration, size, and position apply to single PiP mode only.

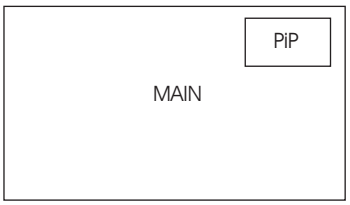
```
PiP SETUP
▶ PiP MODE          -OFF
  ASPECT RATIO
  SIZE
  H POS
  V POS
  PiP BLENDING
```



PiP Off

Sub-menu items: ASPECT RATIO, SIZE, and POSITION apply only to single PiP mode.

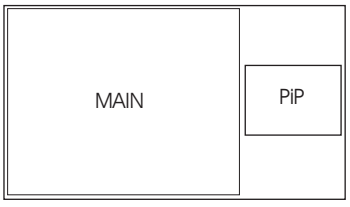
```
PiP SETUP
▶ PiP MODE          - ONE
  ASPECT RATIO
  SIZE
  H POS
  V POS
  PiP BLENDING
```



PiP One

Sub menu item TILE mode apply only to multiple PiP modes.

```
PiP SETUP
▶ PiP MODE          - TILE
  ASPECT RATIO
  SIZE
  H POS
  V POS
  PiP BLENDING
```

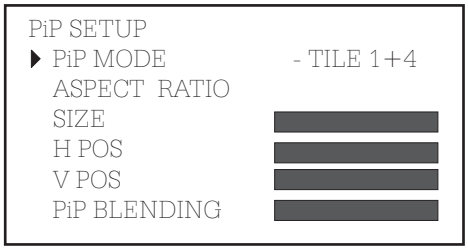


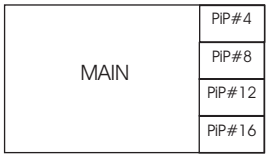
PaP

## On Screen Display (continued)

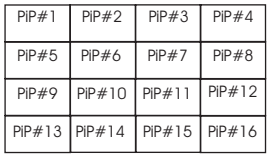
8.7.1.2 TILE MODE

The tile mode allows the user to see multiple PiP windows. The most common way to use tile mode is TV channel browsing. Each PiP window has a unique TV channel number (section 8.6.2 PiP) and the display is updated every second by moving the active PiP window sequentially. The TV tuner frequency is changed to the selected channel for each corresponding PiP window. Since the reference board has only one TV tuner, MAIN window can not watch TV in real time. The MAIN window can be setup for other video sources.

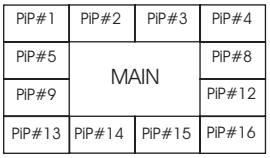


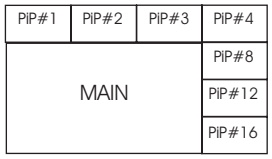

Tile 1+4




Tile 0+16



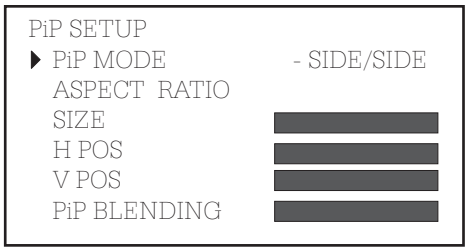

Tile 1+12

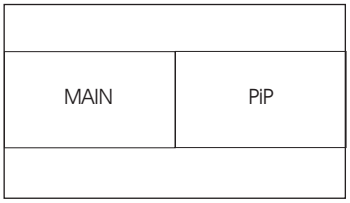



Tile 1+7

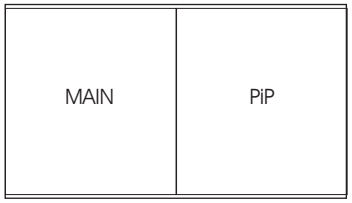
8.7.1.3 SIDE BY SIDE MODE

The Side by Side mode allows the user to see two images, one MAIN and one PiP image together. SBS with vertical stretch pulls the images from top to bottom vertically.




SIDE/SIDE




SBS Vert

8.7.2 ASPECT RATIO

There are two selections for aspect ratio, 4:3 and 16:9, available for display. The firmware calculates the PiP window size based on the selected aspect ratio and relative size value (1-10).

8.7.3 SIZE

The PiP window maintains its aspect ratio regardless of size adjustments. The size can be adjusted in range 1 to 10 (the minimum to maximum PiP window size available). The PiP window size changes according to the output display resolution selected for MAIN window.

8.7.4 POSITION

The single PiP window has 9 (nine) pre-defined positions for selection.

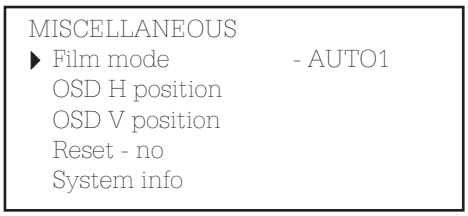
Top Left, Top Center, Top Right
Middle Left, Middle Center, Middle Right
Bottom Left, Bottom Center, Bottom Right

8.7.5 PiP BLENDING

PiP window blending level adjustment is available only when the single PiP window is displayed.

## On Screen Display (continued)

8.9 MISCELLANEOUS




8.9.1 FILM MODE
The film detection switches between VT, AFM, GFX, and SM automatically. This selection allows for manual selection of the processing modes.

8.9.2 OSD POSITION
Allows the user to move OSD to different position on the screen. After the position is selected by "<" and ">" keys, the OSD can be further adjusted in both (V) vertical and (H) horizontal directions. Values are incremented or decremented by the "<" and ">" keys.

8.9.3 RESET
Once selected, the "no" prompt will turn red. Pressing one of the arrow keys will change it to yes. If the select button is pressed with reset on "yes", the system will return all settings in the non-volitile RAM to the default value. You may have to cycle power to have full reset after a selection of yes.

8.9.4 SYSTEM INFO
Displays information that is related to the system. The current installed firmware version is located here.
Updates to features and enhancements will be available on Aurora Multimedia's web site.

Please download Aurora FLASH 123 software to assist you in updating the firmware.

## 9.0 Specifications

### Supported Video Input Timing

| Input Format | Horiz. Freq. (KHz) | Vertical Freq. (Hz) | Active Resolution (Pixels x Lines @ Field/Frame Rate, Hz) | Total (Pixels x Lines) | Pixel Clock (MHz) |
|---|---|---|---|---|---|
| 525/60 NTSC, ITU-R BT601-5, RS-170M | 15.75/1.001 | 60.0/1.001 | 720x480 @ 59.94 i | 858x525 | 13.500 |
| 525/60 NTSC, CCIR 656 | 15.75/1.001 | 60.0/1.001 | 720x480 @ 59.94 p | 858x525 | 27.000 |
| 625/50 PAL/SECAM, ITU-R BT601-5 | 15.625 | 50.000 | 720x576 @ 50.00 i | 864x625 | 13.500 |
| 625/50 PAL/SECAM, CCIR 656 | 15.625 | 50.000 | 720x576 @ 50.00 i | 864x625 | 27.000 |
| 480p 4:3, SMPTE 293M | 31.5/1.001 | 60.0/1.001 | 720x483 @ 59.94 p | 858x525 | 27.000 |
| 720p, SMPTE 296M | 45.0/1.001 | 60.0/1.001 | 1280x720 @ 59.94 p | 1650x750 | 74.25/1.001 |
| 1080i, SMPTE 274M | 33.750/1.001 | 60.0/1.001 | 1920x1080 @ 59.94 i | 2200x1125 | 74.25/1.001 |

### Supported RGB PC Graphics & Video Input Timing

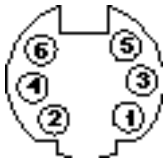
| Mode | Resolution | Nominal Total | Horizontal Nominal Frequency +/-0.5kHz | Vertical Nominal Frequency +/-1Hz | Nominal Pixel Clock (Mhz) |
|---|---|---|---|---|---|
| VGA Text | 720x400 @ 70 Hz | 900x449 | 31.468 | 70.000 | 28.322 |
| VGA | 640x480 @ 60 Hz | 800x525 | 31.469 | 59.940 | 25.175 |
| VGA | 640x480 @ 72 Hz | 832x520 | 37.861 | 72.809 | |
| VGA | 640x480 @ 75 Hz | 840x500 | 37.500 | 75.000 | |
| VGA | 640x480 @ 85 Hz | 832x509 | 43.269 | 85.008 | |
| WVGA | 852x480 @ 60 Hz | 100x525 | 31.700 | 59.940 | 34.000 |
| SVGA | 800x600 @ 56 Hz | 1024x625 | 35.156 | 56.250 | |
| SVGA | 800x600 @ 60 Hz | 1056x628 | 37.879 | 60.317 | 40.000 |
| SVGA | 800x600 @ 72 Hz | 1040x666 | 48.077 | 72.188 | |
| SVGA | 800x600 @ 75 Hz | 1056x625 | 46.875 | 75.000 | |
| SVGA | 800x600 @ 85 Hz | 1048x631 | 53.674 | 85.061 | |
| XGA | 1024x768 @ 60 Hz | 1344x806 | 48.363 | 60.004 | 65.000 |
| XGA | 1024x768 @ 70 Hz | 1328x806 | 56.476 | 70.069 | |
| XGA | 1024x768 @ 75 Hz | 1312x800 | 60.023 | 75.029 | |
| WXGA | 1280x768 @ 60 Hz | 1688x802 | 48.134 | 60.017 | 81.25 |
| 720p | 1280x720 @ 60 Hz | 1650x750 | 45.0 | 59.940 | 74.25/1.001 |
| 1080i | 1920x1080 @ 60 Hz | 2200x1125 | 33.750 | 59.940 | 74.25/1.001 |

*Specifications subject to change without notice.*

## 10.0 Control Port

**RS232 -** Pins 1,3,5 Note: Pin 2 must be disabled with jumper J9 removed (factory default)
Pin 1 - Ground Pin 3 - TX Pin 5 - RX

**Contact Closure -** Pins 1,2,4,6 *Note: Pin 2 must be enable with jumper J9 on TVP-1000*
Pins 1,2: PiP Swap Pins 1,4: Channel + Pins 1,6: Channel -
Pins 1,4,6: PiP On/Off Pins 1,2,4,6: PiP Move




### 10.1 RS-232 Protocol

Baud Rate: 9600 8N1
*Note: Protocol below is as of firmware version 1.30 New commands will be available on future revisions to give more discrete full featured commands. Check on the Aurora website for the latest firmware and RS232 command additions.*

**? IS A QUERY COMMAND (Does not have to be Case Sensitive)**
**! IS A COMMAND (Does not have to be Case Sensitive)**
**~ IS A RESPONSE (ALL RESPONSES ARE CAPITALS)**

*<CR> is 0D hex or 13 decimal*

| | |
|---|---|
| **!KEY_LEFT<CR>** | **Left** |
| **!KEY_RIGHT<CR>** | **Right** |
| **!KEY_UP<CR>** | **Up arrow key** |
| **!KEY_DOWN<CR>** | **Down arrow key** |
| **!KEY_CH-<CR>** | **Channel Down** |
| **!KEY_CH+<CR>** | **Channel Up** |
| **!KEY_SEL<CR>** | **Select** |
| **!KEY_MENU<CR>** | **Menu** |
| **!KEY_0<CR>** | **0** |
| **!KEY_1<CR>** | **1** |
| **!KEY_2<CR>** | **2** |
| **!KEY_3<CR>** | **3** |
| **!KEY_4<CR>** | **4** |
| **!KEY_5<CR>** | **5** |
| **!KEY_6<CR>** | **6** |
| **!KEY_7<CR>** | **7** |
| **!KEY_8<CR>** | **8** |
| **!KEY_9<CR>** | **9** |
| **!KEY_PAUTO<CR>** | **PiP Auto Start / Stop** |
| **!KEY_PSWAP<CR>** | **PiP Swap** |
| **!KEY_PMOVE<CR>** | **PiP Move** |
| **!KEY_PADV<CR>** | **PiP Advance** |
| **!KEY_PONOFF<CR>** | **PiP On/Off** |
| **!KEY_PSIZE<CR>** | **PiP Size** |
| **!KEY_PONOFF<CR>** | **PiP On / Off** |
| **!KEY_PMODE<CR>** | **PiP Mode** |
| **!KEY_FMT<CR>** | **Format key used for Format selection (pillar box, letter box, etc)** |
| **!KEY_AADJ<CR>** | **RGB Auto Adjust** |
| **!KEY_AUD<CR>** | **Audio follow mode (Main or PiP)** |
| **!KEY_OSD<CR>** | **On Screen display on/off button** |
| **!KEY_LAST<CR>** | **Toggles between the last 2 channels selected** |
| **!KEY_INFO<CR>** | **Shows information on the screen** |
| **!KEY_MTV<CR>** | **TV to Main** |

## 10.1 RS-232 Protocol (Continued)

| | |
|---|---|
| !KEY_MVID<CR> | Video to Main |
| !KEY_MSVID<CR> | SVideo to Main |
| !KEY_MRGB<CR> | RGB to Main |
| !KEY_MYPBPR<CR> | YPbPr to Main |
| !KEY_PTV<CR> | TV to PiP |
| !KEY_PVID<CR> | Video to PiP |
| !KEY_PSVID<CR> | Svideo to PiP |
| !KEY_PRGB<CR> | RGB to PiP |
| !KEY_PYPBPR<CR> | YPbPr to PiP |
| !OSDON<CR> | On Screen Display On |
| !OSDOFF<CR> | On Screen Display Off |
| ?OSD<CR> | Query OSD Responds with ~OSDON<CR> or ~OSDOFF<CR> |
| !FLBOX<CR> | Format Letter Box |
| !FPBOX<CR> | Format Pillar Box |
| !FPBXST<CR> | Format Pillar Box Stretch |
| !FPAN<CR> | Format Panoramic |
| !FEXP<CR> | Format Expand |
| !FL1.66<CR> | Format Letter box 1.66 |
| !FL1.78<CR> | Format Letter box 1.78 |
| !FL1.85<CR> | Format Letter box 1.85 |
| !FL2.00<CR> | Format Letter box 2.00 |
| !FL2.35<CR> | Format Letter box 2.35 |
| !AUDMAIN<CR> | Audio Follows Main |
| !AUDPiP<CR> | Audio Follows PiP |
| ?AUDIN<CR> | Query what the audio follows. Responds with ~AUDMAIN<CR> or ~AUDPiP<CR> |
| ?MCH<CR> | Query Main Channel Responds with ~MCH002<CR> for channel 2. |
| !MCHxxx<CR> | Main Channel change !MCH025<CR> for channel 25. xxx = 001 to 125 |
| !MSVIDPRGB<CR> | Main to SVideo, PiP to RGB |
| !MVIDPRGB<CR> | Main to Video, PiP to RGB |
| !MTVPRGB<CR> | Main to TV, PiP to RGB |
| !MSVIDPYPBPR<CR> | Main to SVideo, PiP to YPbPr |
| !MVIDPYPBPR<CR> | Main to Video, PiP to YPbPr |
| !MTVPYPBPR<CR> | Main to TV, PiP to YPbPr |
| !MRGBPSVID<CR> | Main to RGB, PiP to SVideo |
| !MRGBPVID<CR> | Main to RGB, PiP to Video |
| !MRGBPTV<CR> | Main to RGB, PiP to TV |
| !MYPBPRPSVID<CR> | Main to YPbPr, PiP to SVideo |
| !MYPBPRPVID<CR> | Main to YPbPr, PiP to Video |
| !MYPBPRPTV<CR> | Main to YPbPr, PiP to TV |
| !PONE<CR> | SIngle PiP |
| !POFF<CR> | Full Screen |
| !PSBS<CR> | Side by Side |
| !PSBSV<CR> | Side by Side Vertically Streched |
| !PPAP<CR> | PAP |
| !PT0+16<CR> | 16 Tile |
| !PT1+4<CR> | 1 Main 4 Tile |
| !PT1+7<CR> | 1 Main 7 Tile |
| !PT1+12<CR> | 1 Main 12 Tile |
| !PBxx<CR> | PiP Blending Level xx= 01 to 16 The higher the number the less transparent |
| !PSxx<CR> | PiP Size for Single Mode xx= 01 to 15 The higher the number the bigger the PiP |
| !PHxxxVxxx<CR> | PiP Position for SInIge Mode xxx = 000 to 100 Hxxx is Horizontal Position Vxxx is Vertical Position |
| !PxxCHxxx<CR> | PiP Channel Change Pxx is PiP number = 1 to 16 CHxxx is PiP channel = 001 to 125 |
| ?PxxCH<CR> | PiP Channel Query xx = 1 to 16 Responds with ~PxxCHxxx<CR> Pxx is PiP number CHxxx is PiP channel |
| ?MIN<CR> | Main Input Query responds with ~MVID<CR> or ~MSVID<CR> or ~MTV<CR> or ~MRGB<CR> or ~MYPBPR<CR> |

## 10.1 RS-232 Protocol (Continued)

| | |
|---|---|
| ?PIN<CR> | PiP Input Query responds with ~PVID<CR> or ~PSVID<CR> or ~PTV<CR> or ~PRGB<CR> or ~PYPBPR<CR> |
| ?PHV<CR> | PiP Single Mode Horz and Vert location Query responds with ~PHxxxVxxx<CR> xxx= 000 to 100 Hxxx is Horizontal Position Vxxx is Vertical Position |
| ?PMD<CR> | PiP Mode Query responds with ~POFF<CR> or ~PONE<CR> or ~PSBS<CR> or ~PPAP<CR> or ~PT1+4<CR> or ~PT1+12<CR> or ~PT0+16<CR> |

Use the commands below only if you are experienced with the operation of the XTune. If they are not implemented properly, flashing of the video will occur if an invalid combination of Main and PiP are selected. Try to use the dual switching commands above to prevent this scenario from happening.

| | |
|---|---|
| !MSVID<CR> | Main SVideo |
| !MRGB<CR> | Main RGB |
| !MTV<CR> | Main TV |
| !MYPBPR<CR> | Main YPbPr |
| !PSVID<CR> | PiP SVideo |
| !PVID<CR> | PiP Video |
| !PRGB<CR> | PiP RGB |
| !PTV<CR> | PiP TV |
| !PYPBPR<CR> | PiP YPbPr |

## Character Generator Commands

The character generator is able to do 15 Rows by 30 columns and can be position anywhere on the display using the delay commands.

!CHDxxxVDxxx<CR> Horizontal and Vertical Delay HDxxx = 000 to 255 VD = 001 to 255

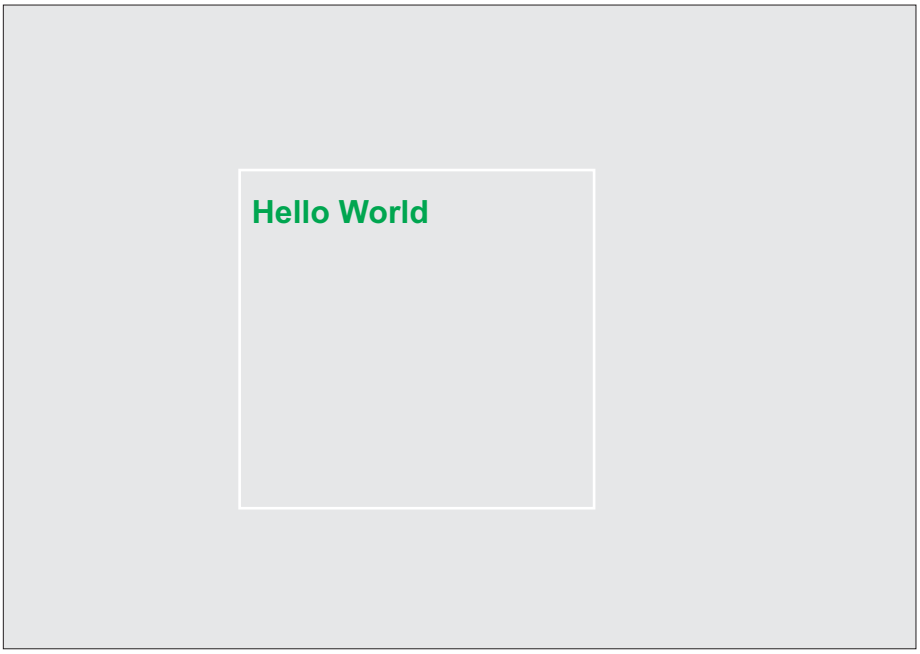
This is the delay command. It determines where the 15 x 30 character display box will be located on the screen. Depending on the output resolution, the values may change from one resolution to the next to keep the text in the same area. It is good practice to send the delay out at least once when powering up the unit since it is not stored in memory.

!CTxxFxSxxCxxHxxVxx-xxxxxxxxxxxxxxxxxxx<cr> Txx = 00 to 30 Fx = 0 or 1 Sxx = 16 to 63 Cxx = 0 to 7 Hxx = 0 to 29
Vxx = 0 to 14 -xxxxxxxxxx = ASCII text up to 30 characters

This is the command that does it all.
T is text timeout which is up to 30 seconds. 00 is no timeout.
F is a function command. 0 does nothing but 1 will clear the entire OSD display
S is character size ranging from 16 to 63
C is color 0 - BLACK, 1 - BLUE, 2 - GREEN, 3 - CYAN, 4 - RED, 5 - MAGENTA, 6 - YELLOW, 7 - WHITE
H is Horizontal position (column) ranging from 0 to 29
V is Vertical position (row) ranging from 0 to 14
Anything after the - can be text up to 30 characters long. Be aware that if you start at H25 for example you can only enter 5 characters. This is because you are starting 25 spaces over already leaving only 5 left.

The following string will clear the screen then send the text Hello World in the color Green on the 3 row starting at the 2nd column and timeout after 4 seconds with a text size of 20.
!CT04F1S20C02H01V02-Hello World<cr>
If it is desired to have multiple colors the next example will make Hello yellow and world blue.
!CT04F1S20C06H00V02-Hello<cr> then send !CT04F0S20C01H06V02-World<cr>

It is best if using the text generator to turn off the OSD. If left on any command that utilizes the OSD will clear the last message sent. It is recommended when using the command to use timeouts since static images can burn into a display causing damage.




**The above is to show the display area (grey) with the text Hello World in Green. The white outline is a representation of where the 15 x 30 area may be position based on the delay commands. A white border does not appear on the actual screen.**

## General Info

Unless otherwise noted all valid commands are echoed back if properly received.
When Main TV channel is changed via remote or contact closure, the RS232 is updated by sending a ~MCHxxx<CR> response
Invalid commands will reply with ~ERROR<CR>.

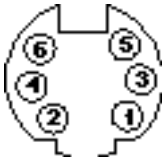
## Tips:

When controlling the TVP-1000 through the Pioneer Plasma RS232 send a 0Dh to clear the buffer either 100ms after a Pioneer Plasma specific command is sent or 100ms before you send a TVP-1000 command. Since the Plasma shares the RS-232 with the TVP-1000 the TVP-1000 is always looking at the strings. Sending a <cr> clears the buffer of the TVP-1000 to make certain a full and proper string is received. If there is something in the buffer the TVP-1000 will respond with ERROR<cr> letting you know there was garbage in the buffer. You do not have to clear the buffer if you are sending multiple TVP-1000 commands since it is assumed they are all valid. The only time this should be an issue is when a command is sent for the Plasma such as input 3 command or some other command.

## 11.0 Connector Specifications

### CONTROL

**RS232 -** Pins 1,3,5 Note: Pin 2 must be disabled with jumper J9 removed (factory default)
Pin 1 - Ground Pin 3 - TX Pin 5 - RX




**Contact Closure -** Pins 1,2,4,6 *Note: Pin 2 must be enable with jumper J9 on XTune*
Pins 1,2: PiP Swap Pins 1,4: Channel + Pins 1,6: Channel -
Pins 1,4,6: PiP On/Off Pins 1,2,4,6: PiP Move

### RGB/YPbPr

**15 Pin VESA VGA Connector**
1 Red video / Pr
2 Green video / Y
3 Blue video /Pb
4 Not used
5 Ground
6 Red (Pr) return (ground)
7 Green (Y) return (ground)
8 Blue (Pb) return (ground)
9 Key (no pin)
10 Sync return (ground)
11 Not used
12 Not used
13 Horizontal sync
14 Vertical sync
15 Not used

### Audio

**TRS Connector 1/8"**
Tip - Right Ring - Left Sleeve - Ground

### S-Video

**4 pin Mini Din**
1 Y Ground
2 C Ground
3 Y Intensity (Luminance)
4 C Color (Chrominance)

## 12.0 Troubleshooting

***TV Tuner***

**Random noise in video image** - Check antenna position or cable connection. Weak signals can cause noise. Use of an RF Signal amplifier may help. Check the TV Source setting in the menu for proper selection between broadcast, cable, IRC, and HRC.

**White noise** - Check antenna position or cable connection. Check the TV Source setting in the menu for proper selection between broadcast, cable, IRC, and HRC.

**Hum on all channels** - Poor grounding will cause this problem. The cable feed should be grounded at entry into building or house structure. Jensen Transformers model VR-1FF CATV Ground Isolator may also do the trick if the ground problem can not be found.

**Ghosting** - Check antenna position. Sometimes to much gain from the cable source can cause this type of problem. Radio Shack sells 3dB and 6dB attenuators that might help.

***Overall Image Quality***

**Image is always green** - Make certain Plasma is set to Component 1 in the integrator menu.

**Image does not fit screen** - Try adjusting the horizontal and vertical size in the TVP-1000 menu.

**Computer image jitters** - Try adjusting the clock and phase for the input.

**Computer signal does not lock** - Make certain the output driver of the PC conforms to the input listing of the TVP-1000. Try to use VESA standard modes as the TVP-1000 is programmed for most VESA standards up to 1024 x 768.

**Image flickers** - This can happen if 2 video sources are selected for the Main and PiP. (Example: S-Video is the Main and TV is the PiP.) This situation can only happen via RS232 control if the program allows the selection to occur.

**RS-232**

**No Communication** - Make certain PC or control device is set to 9600 8N1. Make certain the Plasma is set to 9600 in the integrator menu. Check the 6 Pin - 6 Pin cable that goes from the combo out of the Plasma to the control port of the TVP-1000.

**'ERROR' is always received** - Some terminal programs send both carriage return and line feed (0Dh, 0Ah) when the enter key is pressed. Make certain it only sends carriage return (0D hex). When writing code try to put a 0Dh 100ms before sending a TVP-1000 command to make certain the buffer is empty.

***PiP Modes***

**Side by Side does not accept a source** - Depending on the output vs the input resolution the unit will not accept certain inputs in the Main or PiP. Just try reversing the selection.

***On Screen Display***

**No OSD -** Pressing the OSD button on the remote will toggle the display on and off. The default on power up is on.

## 13.0 Frequently Asked Questions

It is generally a good idea to make certain the latest firmware from the Aurora site is loaded into the unit. To find out what revision the TVP-1000 firmware is, go to miscellaneous, then system info under the TVP-1000 menu. Compare it with the web. Updating the latest rev will assure any past bugs are fixed or enhance features are added.

Q: Why is the screen green?
A: Pioneer Integrator menu is not setup properly. Slot input under options of the Pioneer option menu must be set to Component 1.

Q: The image changes back to Pillarbox whenever the source is changed or unit is turned off.
A: Input Setup in the TVP-1000 menu has a setting for Main Format. Default is Auto for the WSS detection. Change this to anamorphic (16:9 Ratio) or Pillarbox (4:3 Ratio) and the unit will remember the last setting for format.

Q: Side by Side does not work.
A: RGB must be on the Main side not the PiP when selecting this feature.

Q: My remote is intermittent.
A: Make certain it is aimed directly at the sensor and not too close to the unit.

Q: My remote does not work.
A: Try pressing TVP-1000 at the top of the remote to control the TVP-1000 and Plasma to control the Plasma. If this does not work try replacing the batteries.

Q: The TVP-1000 will not work via RS232 through the plasma.
A: Make certain the supplied black 6 pin - 6 pin cable is connected from the TVP-1000 o the Combo out on the Plasma. Check to see if the Baud Rate in the Pioneer integrator menu was changed to 9600 and that the unit was given an ID number.

Q: None of the TV channels work or channel 5 and 6 only work.
A: Under TV Setup of the TVP-1000 menu try changing the Source to Cable, HRC, or IRC while on channel 5 or 6. When an image shows up that is the setting you want.

Q: How do I change formats?
A: The Format key on the remote will revolve through all the different formats.

Q: Can audio follow the PiP image?
A: Yes, by pressing the Audio key the audio will toggle between following the main or the PiP image. The default is main upon power on.

Q: How do I get audio out of the plasma?
A: On the plasma there is a 1/8” TRS (mini-headphone connector) audio connector labeled output. This connector is on the plasma not the TVP-1000. Adaptors can be bought to go from 1/8” TRS to dual female RCA phono for easier connections. Radio Shack is a good source for this.

Q: How do I get YPbPr (Component Video) into the 15pin HD connector?
A: Buy a industry standard 15 pin HD male to 5 BNC cable. Also, buy 3 BNC to RCA adaptors to connect to the red, green, and blue. The other 2 cables are not needed. This will save you a lot of money compared to buying a special cable that goes directly to RCA.

## 13.0 Frequently Asked Questions Continued

Q: I can not get an image out of my Satellite receiver.
A: Some receivers output 1080i and 720p as RGBHV. The current version of TVP-1000 firmware only supports video resolution on the YPbPr.

Q: Is there an easy way to do translucent PiP.
A: With single PiP selected use the up and down arrows on the remote to control how much the image is blended.

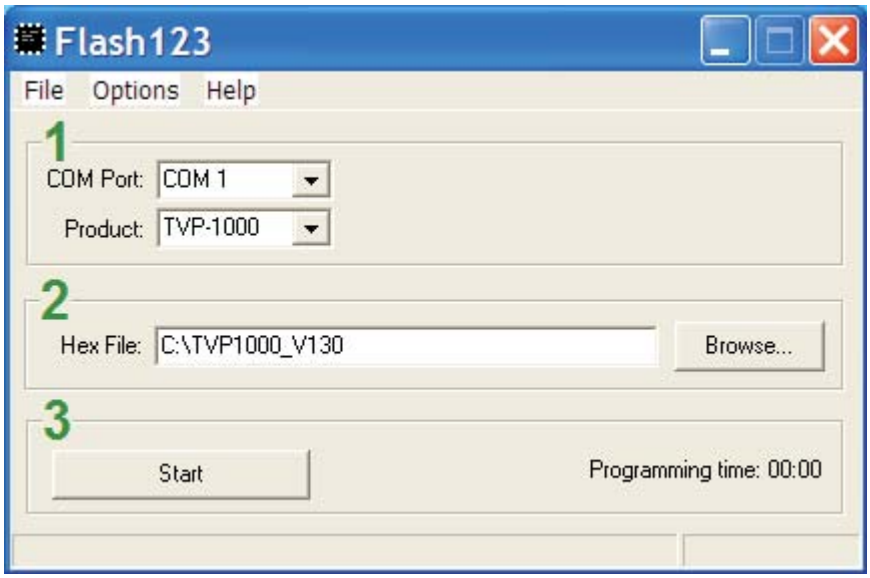
Q: PiP on/off button on the remote does not work properly.
A: The PiP on/off is meant to turn on and off the last selected PiP mode. It remembers what the last mode was and returns back to it. Until a mode is selected for the first time it will do nothing.

Q: I do not get an image from my PC.
A: Make certain it is set for a standard VESA resolution. Some computers use none standard frequencies even though the resolution is the same. If you are using a laptop make certain the laptop is set to output a signal. Some laptops have to be turned on while connected to a device and others have a function key selection to use the VGA output connector.

Q: My laptop shuts down when it is connected to the 15pin HD.
A: Some laptops will not work if pin 9 of the VGA connector is present. A quick fix is to break off pin 9 of the male 15 pin HD connector on the cable. It only needs to be done to one side.

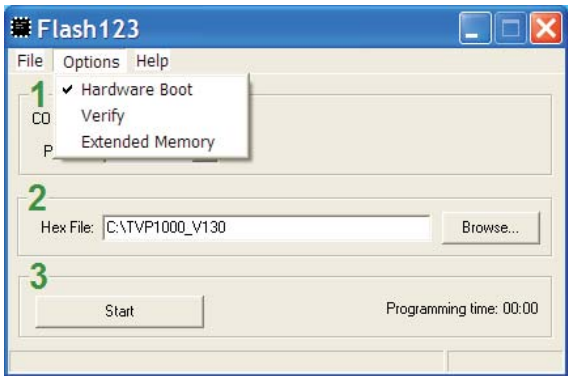
## 14.0 Upgrading Firmware

1) Download latest copy of Flash123 from www.auroramultimedia.com under the TVP-1000 product section.
2) Download the latest version of firmware.
3) Install Flash123 on a Windows 2000 or better machine.
4) With the Plasma off connect the 6 pin Mini Din to 9 pin RS232 cable between the Control port of the TVP-1000 and the Com port of the PC. Do not try to upgrade firmware going through the Plasma RS-232. If you do not have a cable the help menu of Flash123 has the pin out.
5) Next, turn the power on to the Plasma and launch the Flash123 program.
6) Select the Com port, then the file, then click on start. The firmware should start uploading. This process could take a few minutes. Do not turn off the power to the Plasma or unplug the RS-232 cable when uploading firmware.




### What to do if flash upgrade fails or is interrupted:

Well everyone needs a backup plan just in case.
If a flash upload is interrupted, Flash123 will not work unless Hardware Boot is checked under the options selection. By selecting this, you are telling the Flash123 program it is still in firmware upgrade mode. Once checked cycle the power to the plasma using the remote then click on start again.




If this still does not work please call Aurora Multimedia technical support for assistance.

# Limited Lifetime Warranty

Aurora Multimedia Corp. (“Manufacturer”) warrants that this product is free of defects in both materials and workmanship for the product lifetime as defined herein for parts and labor from date of purchase. This Limited Lifetime warranty covers products purchased in the year of 2003 and after. Product lifetime is defined as 7 years from discontinuance of product. Motorized mechanical parts (Hard Drives, DVD, etc) and cables are covered for a period of 1 year. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

A) The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,
B) The product has not been operated in accordance with procedures specified in operating instructions: or,
C) The product has been repaired and or altered by other than manufacturer or authorized service center; or,
D) The product's original serial number has been modified or removed: or,
E) External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product.
F) Part(s) are no longer available for product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

No other warranty, express or implied other than Manufacturer's shall apply.

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage.

This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.

# FCC Part 15 Statement

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- I ncrease the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commissions rules.

In order to maintain compliance with FCC regulations shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio & television reception.

# CE Declaration of Conformity

We, Aurora Multimedia Corporation declare under our responsibility that the electrical product:

TVP-1000 - Pioneer Plasma Scaler, TV Tuner, PiP Engine Card

to which this declaration relates is in the conformity with the following standards:

EN55013:2001

EN55024:1998

EN60065:1998

following the provisions of EMC and Low Voltage directives.

United States of America, January 3, 2003